TITLE

(01) Firearms Cartridge with Rectangular, Rounded Oblong, or Elliptical Casing

CROSS-REFERENCE TO RELATED APPLICATIONS

(02) Not applicable.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH

(03) Not applicable.

REFERENCE TO SEQUENCE LISTING, ETC.

(04) Not applicable.

FIELD OF THE INVENTION

(05) This invention pertains to cartridges for any firearm for which it is desirable to hold as many rounds of ammunition as possible as compactly as possible within its magazine or cylinder. Typical examples would be rifles, machine guns, shotguns, pistols, or revolvers for combat, self-defense or police use.

BACKGROUND OF THE INVENTION

(06) Conventional firearm cartridges universally have circular cross sections. They are simple and inexpensive to manufacture, but because of their geometry cannot be tightly packed to use all of the space available in a magazine or storage container. This inability to fit together without leaving empty spaces between the rounds reduces the number of rounds a magazine could potentially hold, and/or increases the required volume of the magazine, or

limits the number of rounds in a revolver cylinder, all of which are undesirable. Furthermore, for a fixed casing diameter, the amount of propellant desired sets a minimum length, which in some cases may dictate an undesirably long cartridge, whereas a square, rectangular, rounded oblong, or elliptical cross section would allow a shorter cartridge with the same firepower.

(07) The German arms company Heckler & Koch developed an assault rifle in the late 1970's and early 1980's that used ammunition with a square cross section, but this ammunition did not have a metal casing as in the present invention. The Heckler & Koch caseless ammunition had the advantage of lighter weight and no empty casings to expel or remove, but is less well protected against accidental discharge or environmental exposure and degradation than more traditional ammunition protected by a metal or other inert casing. Also, the heat generated by the burning propellant is transmitted directly to the breech instead of being absorbed by a metal casing which is then expelled, causing rapid heating of the gun when firing multiple rounds.

BRIEF SUMMARY OF THE INVENTION

(08) This invention describes cartridges for pistols, rifles, revolvers, or other armaments with casings having a generally square, rectangular, rounded oblong or ellipse-like cross section instead of the circular cross section typical of conventional cartridges. Square, rectangular, oblong or elliptical shapes may be butted together in a magazine or other container with much tighter packing and less wasted (empty) space than is possible for circular-section casings holding the same volume of propellant. Thus a larger number of rounds may be contained in a shorter magazine or smaller diameter revolver cylinder than would be possible with circular section cartridges of equivalent volume. At the bullet end, the cartridge would neck down over a short distance to a circular cross section to hold the bullet. The receiver end of the barrel in a pistol or rifle, or the cartridge bores in a revolver cylinder, must be shaped to closely match the form of the cartridge.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

(09) The figures are not drawn to any scale, as the specific dimensions of the cartridges will vary depending on the caliber of the bullet, the desired aspect ratios (width, height, and length), the radii of any corner chamfers, and operational details of the casing such as wall thickness, position and shape of any extraction grooves, and dimensions of any primer holes.

(10) Figure 1 shows a front (bullet end) view of a cartridge with a rectangular, corner-filleted casing shape.

(11) Figure 2 shows a perspective view of a rectangular style cartridge as in Figure 1.

(12) Figure 3 shows a front (bullet end) view of a cartridge with an elliptical casing shape.

(13) Figure 4 shows a perspective view of an elliptical style cartridge as in Figure 3.

(14) Figure 5 shows a front (bullet end) view of a cartridge with a rounded oblong casing shape.

(15) Figure 6 shows a perspective view of a rounded oblong style cartridge as in Figure 5.

DETAILED DESCRIPTION OF THE INVENTION

(16) This invention describes cartridges for pistols, rifles, revolvers, or other armaments with casings having a generally square, rectangular, rounded oblong or ellipse-like cross section instead of the circular cross section typical of conventional cartridges. Square, rectangular, oblong or elliptical shapes may be butted together in a magazine or other container with much tighter packing and less wasted (empty) space than is possible for circular-section casings holding the same volume of propellant. Thus a larger number of rounds may be contained in a shorter magazine or smaller diameter revolver cylinder than would be possible with circular section cartridges of equivalent volume. At the bullet end, the cartridge would neck down over a short distance to a circular cross section to hold the bullet. The receiver end of the barrel in a pistol or rifle, or the cartridge bores in a revolver cylinder, must be shaped to closely match the form of the cartridge.

(17) To achieve tighter packing, the bullet diameter for these cartridges would typically be smaller than that for a circular-section cartridge of equivalent volume. This would yield a higher bullet velocity unless the bullet length or density is also increased. Alternatively, the larger cross sections could be used to produce shorter rounds having the same firepower as a longer round with a circular section.

(18) When used in a straight pistol or rifle magazine, square, oblong, or rectangular section casings may be arranged so that the flat sides butt against each other, using virtually all of the available space except for small corner fillets or chamfers. This could provide either a 20-25% increase in firepower over circular cartridges of equal length and height, or a 20-25% increase in capacity (number of rounds) with equivalent firepower per bullet.

(19) When used in a revolver cylinder, the narrower section of elliptical or oblong casings should allow either at least one additional round of equivalent power to be added to the design of a cylinder without significantly changing its diameter, or a 20-25% increase in firepower for the same number of rounds.

CLAIMS

(20) 1. An ammunition cartridge for rifles, pistols, revolvers, shotguns, or other firearms consisting of a bullet of any desired size, shape and material composition mated to a propellant-filled casing of generally rectangular or square cross-section (taken perpendicular to the longitudinal axis) except for a short section at the front of the casing that necks down to match the bullet, with or without other typical casing features such as an extraction groove or central rear opening for a primer. The rectangular or square section may include rounded corners (fillets) or chamfered corners to facilitate manufacture and/or cartridge feeding.

(21) 2. An ammunition cartridge for rifles, pistols, revolvers, shotguns, or other firearms consisting of a bullet of any desired size, shape and material composition mated to a propellant-filled casing of generally ellipse-like cross-section (taken perpendicular to the

longitudinal axis) except for a short section at the front of the casing that necks down to match the bullet, with or without other typical casing features such as an extraction groove or central rear opening for a primer.

(22) 3. An ammunition cartridge for rifles, pistols, revolvers, shotguns, or other firearms consisting of a bullet of any desired size, shape and material composition mated to a propellant-filled casing with a rounded oblong cross-section (taken perpendicular to the longitudinal axis) except for a short section at the front of the casing that necks down to match the bullet, with or without other typical casing features such as an extraction groove or central rear opening for a primer.

ABSTRACT OF THE DISCLOSURE

(23) This invention describes ammunition cartridges for pistols or other armaments with propellant-filled casings having a generally square, rectangular, rounded oblong or ellipse-like cross-section. These casings would neck down over a short distance at the front to mate with the bullet. These shapes would allow more rounds of equivalent firepower to be contained in a shorter magazine or smaller diameter revolver cylinder than is possible with standard circular cross-section ammunition.